Center Independent Research & Development: GSFC IRAD

Lunar GPS Sensor

Completed Technology Project (2017 - 2018)

Project Introduction

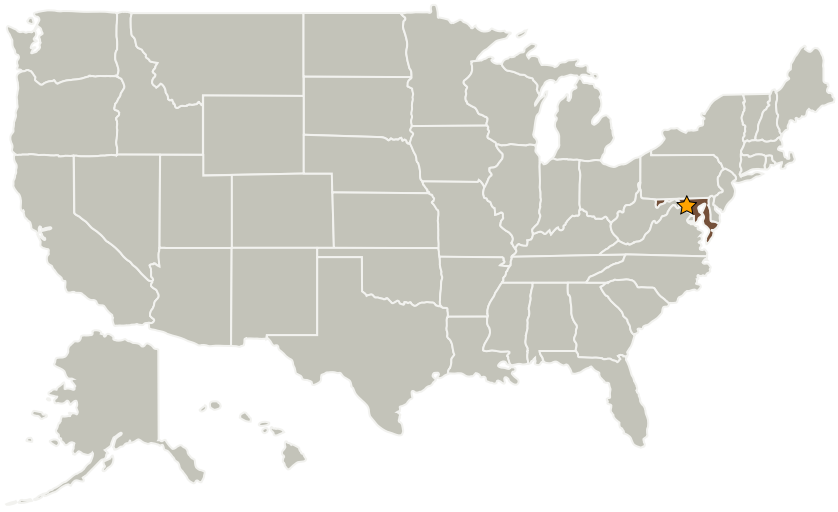
The goal of this project is to develop a specialized GPS sensor prototype to enable high-performance GPS navigation for future cis-lunar and lunar missions. This sensor will be based on the NavCube, the next-generation version of the record-setting high-altitude MMS-Navigator GPS receiver. The proposed GPS sensor will target future lunar missions including robotic and human spaceflight applications. The proposed lunar GPS sensor will combine enhanced GPS signal processing and use the Goddard Enhanced Onboard Navigation System (GEONS) flight software to provide position and timing information for future lunar missions and cis-lunar missions, and will benefit crewed and un-crewed science and exploration missions.

Anticipated Benefits

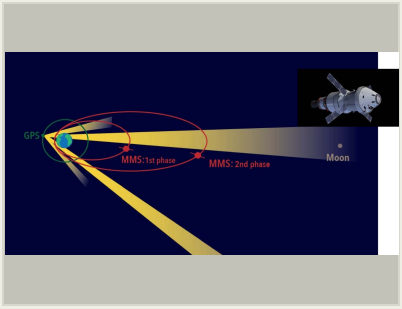
Navigation and timing information for future lunar missions and cis-lunar missions

Will benefit crewed and un-crewed science and exploration missions

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland



Previous studies showed that tracking of GPS signals is possible at lunar distances

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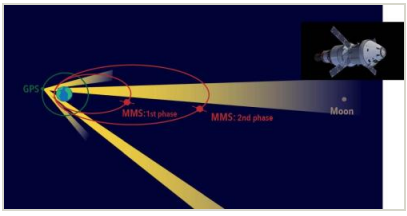
Primary U.S. Work Locations

Maryland

Images



Untitled
Previous studies showed that tracking of GPS signals is possible at lunar distances
(https://techport.nasa.gov/image/28249)

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Managers:

Jason W Mitchell
Timothy D Beach
Lavida D Cooper

Principal Investigator:

Munther A Hassouneh

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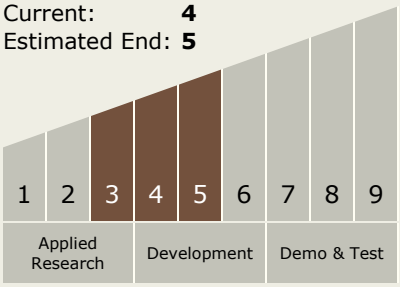
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **5**



Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.5 Autonomous Rendezvous and Docking
    - TX04.5.1 Relative Navigation Sensors

Target Destination

The Moon

Supported Mission Type

Push